Critical Release Notice

Publication number: 297-1001-010
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The content of this customer NTP supports the SN06 (DMS) and ISN06 (TDM) software releases.

Bookmarks used in this NTP highlight the changes between the baseline NTP and the current release. The bookmarks provided are color-coded to identify release-specific content changes. NTP volumes that do not contain bookmarks indicate that the baseline NTP remains unchanged and is valid for the current release.

Bookmark Color Legend

Black: Applies to new or modified content for the baseline NTP that is valid through the current release.

Red: Applies to new or modified content for NA017/ISN04 (TDM) that is valid through the current release.

Blue: Applies to new or modified content for NA018 (SN05 DMS)/ISN05 (TDM) that is valid through the current release.

Green: Applies to new or modified content for SN06 (DMS)/ISN06 (TDM) that is valid through the current release.

Attention!
Adobe® Acrobat® Reader™ 5.0 is required to view bookmarks in color.

Publication History

March 2004

Standard release 02.04 for software release SN06 (DMS) and ISN06 (TDM).

Change of phone number from 1-800-684-2273 to 1-877-662-5669, Option 4 + 1.

297-1001-010

DMS-100 Family

North American DMS-100

Electrostatic Discharge Protection Guide

BASE03 and up   Standard 02.03   April 1999

northern telecom

DMS-100 Family

North American DMS-100

Electrostatic Discharge Protection Guide

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Publication history

1999 April

Issue 02.03 of this document released, based on feedback from NTJI.

1998 February

Issue 02.02 of this document released, based on ETAS feedback.

1995 July

Issue 02.00 of this document released, based on ETAS feedback.

1991 March

First release of this document.

Contents

About this document

When to use this document

This document contains guidelines for Electrostatic Discharge (ESD) precautions necessary to avoid damage and/or service disruption to DMS–100 equipment. This document describes how to apply ESD controls during installation and maintenance activities.

How to check the version and issue of this document

The numbers, for example 01.01, indicate the version and issue of the document.

The first two digits of these numbers indicate the version. The version number increases when a document update occurs to support a new software release. For example, the first release of a document is 01.01. In the *next* software release cycle, the first release of the same document is 02.01.

The second two digits of the numbers indicate the issue. The issue number increases when a document revision and release occur in the *same* software release cycle. For example, the second release of a document in the same software release cycle is 01.02.

This document is for use in all DMS-100 Family offices. More than one version of this document can be present. Determine if you have the latest version of this document and the arrangement of the documentation for your product. To determine the version of the document and the arrangement for your product, check the release information. The *DMS-100 Family Guide to Northern Telecom Publications*, 297-1001-001 contains the release information.

References in this document

This document refers to the following documents:

- *Product Documentation Directory*, 297-8991-001
- *Power Distribution and Grounding Systems*, 297-1001-156

What precautionary messages mean

The ESD precautionary measures contained in this practice apply to all DMS–100 equipment. This equipment includes frames, cabinets, cables, circuit packs and other specified equipment.

The types of precautionary messages used in NT documents include attention boxes and danger, warning, and caution messages.

An attention box identifies information that is necessary for the correct performance of a procedure or task. An attention box also can identify the correct explanation of information or data. Danger, warning, and caution messages indicate possible risks.

Examples of the precautionary messages are as follows:

ATTENTION Information needed to perform a task

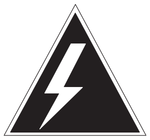
> **ATTENTION**
> Deprovision the DS-3 ports that are not used before you install a DS-1/VT Mapper. If you do not deprovision the ports first, the system cannot carry the DS-1 traffic through the DS-1/VT Mapper. If you provision the DS-1/VT Mapper, but do not deprovision the DS-3 ports, the system cannot carry traffic through the Mapper.

DANGER Possibility of personal injury



> **DANGER**
> **Risk of electrocution**
> Do not open the front panel of the inverter unless you removed fuses F1, F2, and F3. The inverter contains high-voltage lines. Until you remove the fuses, the high-voltage lines are active, and you risk electrocution.

WARNING Possibility of equipment damage



WARNING
Damage to the backplane connector pins
Do not bend the backplane connector pins. To prevent bent connector pins, align the card before you seat the card. Use light thumb pressure to align the card with the connectors. Use the levers on the card to seat the card into the connectors.



WARNING
Damage to the backplane connector pins
Do not bend the backplane connector pins. To prevent bent connector pins, align the card before you seat the card. Use light thumb pressure to align the card with the connectors. Use the levers on the card to seat the card into the connectors.

CAUTION Possibility of service interruption or degradation



CAUTION
Possible loss of service
Before you continue, make sure that you remove the card from the inactive unit of the peripheral module. If you remove a card from the active unit, loss of subscriber service occurs.



CAUTION
Possible loss of service
Before you continue, make sure that you remove the card from the inactive unit of the peripheral module. If you remove a card from the active unit, loss of subscriber service occurs.

Command, parameter, and response format

Commands, parameters, and responses in this document conform to the following standards.

Input prompt (>)

An input prompt (>) indicates that the information that follows is a command:

>BSY

Commands and fixed parameters

Commands and fixed parameters that you enter at a MAP terminal appear in uppercase letters:

>BSY CTRL

Variables

Variables appear in lowercase letters:

>BSY CTRL ctrl_no

You must enter the letters or numbers that the variable represents. A list that follows the command string explains each variable.

Responses

Responses correspond to the MAP display and appear in a different type:

```
FP 3 Busy CTRL 0: Command request has been submitted.
FP 3 Busy CTRL 0: Command passed.
```

The following example from a procedure shows the command syntax used in this document:

1 To manually busy the CTRL on the inactive plane, type

>BSY CTRL ctrl_no
and press the Enter key.

where

ctrl_no is the number of the CTRL (0 or 1)

Example of a MAP response:

```
FP 3 Busy CTRL 0: Command request has been submitted.
FP 3 Busy CTRL 0: Command passed.
```

Card Handling

An electrostatic charge of over 25 kV can develop on a human body. Electrostatic charges up to 5 kV can develop in central office environments. The development of an electrostatic charge is more likely when humidity is low. Because of low humidity and the associated electrostatic charges, you must follow all electrostatic discharge (ESD) precautionary measures in this document.

In this section, the term “card” refers to all DMS-100 circuit packs, paddle boards, line cards, and filler faceplates. Filler faceplates are not transported in anti-static containers. You must use the procedures that apply to other card types when you handle filler faceplates.

How to handle cards

When you handle cards, use the following general guidelines:

1 Transport all cards in anti-static containers (normally an electrically conductive box or electrostatic discharge protection bag). This requirement applies to the

- — transfer of a card from storage to a frame or cabinet
- — transfer of a card from a frame or cabinet to a frame or cabinet
- — installation of a card

All anti-static containers must be in good condition, without holes or tears. Discard any damaged anti-static containers.

2 Store all cards in the anti-static container or a storage cabinet until you need the card.

3 Always wear a wrist strap connected to a ground when you handle cards that are not in an anti-static container. Test the wrist strap before you use it. Connect the wrist strap to a frame ground before you handle a card. The use of a static control mat is optional.

4 Wear a wrist strip connected to a groung and contact only

   a. card edges

   b. faceplates

   c. locking latches

   d. card pullers

5 To prevent damage to cards, do not

   a. drop cards

   b. stack the cards on top of or against each other

   c. touch any components or tracks on the card

   d. handle a card without a wrist strap connected to a ground

   e. use a wrist strap that you did not test

   f. use a wrist strap that you did not connect to frame ground

   g. use a grounded wrist strap connected to logic ground.

   h. store a card in a location other than the ESD protective container or storage cabinet.

   i. transport a card without an ESD protective container.

   j. hang a card on a frame or cabinet by the locking latches

Card installation procedure

Use the following procedure to install a card.

1 Test the wrist strap.

2 Transport the card to the installation location in an ESD protective container.

3 Connect the wrist strap to frame ground at the installation location.

4 Remove the card from the ESD protective container.

5 Hold the card by the faceplate and slide the card into the guides on the shelf. If the card does not have a faceplate, handle the the card by the edges. Push the card all the way into the slot on the shelf.

Card removal procedure

Use the following procedure to remove a card.

1 Test the wrist strap.

2 Connect the wrist strap to frame ground at the removal location.

3 Unseat and remove the card from the shelf slot.

4 Place the card you removed in an ESD protective container for transportation.

How to store cards

Store all cards in the ESD protective container or a storage cabinet until you need the cards. Test the wrist strap and connect the wrist strap to frame ground before you insert or remove cards in the storage cabinet.

Other maintenance activities

Use the following guidelines when you perfom the indicated maintenance action.

Maintenance Activity	Guideline
Connect interface cables to the frame or cabinet backplane or bulkhead.	Wear a wrist strap while you connect the interface cable. If possible, touch the conductors or pins of the interface cable before you connect the interface cable. If possible, do not connect an interface cable to a pack inserted into a backplane.
Perform wiring changes on backplanes, FSP and MSP Supervisory panels.	Wear a wrist strap during these activities.
Insert or remove magnetic tapes	Wear a wrist strap during these activities.

Static control devices

Static control devices make sure that an electrostatic charge does not develop. Static control devices also make sure charges generated dissipate safely to ground.

Grounding

The performance of static control devices like wrist straps and conductive mats depends on a good connection to frame ground. Install all DMS-100 equipment according to 297–1001–156, *Power Distribution and Grounding Systems*.

Wrist straps

A wrist strap is a strip of conductive material worn in contact with the skin around the wrist. The strip has a flexible ground wire cord that contains a resistor. This resistor provides a controlled impedance path to a jack or clip at the end of the wire. The jack or clip connects to frame ground in the work area.

You must test the electrostatic discharge (ESD) wrist straps before you use the wrist straps during any maintenance activities.

You must use the ESD wrist straps when you handle all DMS-100 cards, and other equipment as specified.

How to test ESD wrist straps

You must verify that ESD wrist straps perform within specifications before you handle any cards, or other DMS-100 equipment as specified. One way to test a wrist strap is to use a Go/No-Go type wrist strap tester if available. This type of tester provides an audible and visual indication of the wrist strap condition.

You can use a Volt-Ohm meter (VOM) to make sure that the impedance measured is reliable and between 0.8 and 10 MΩ. The impedance is through the wrist strap and through the body. First, perform this measurement with the wrist strap not attached to the body. Next, perform this measurement with the wrist strap secured to the wrist.

When you test a wrist strap, stress the wrist strap cord from side to side and pull on the ends of the cord. This type of the test detects bad electrical contact and openings in the wire.

Static Control Mats

A static control mat contains anti-static material and has a flexible ground wire cord. The ground wire cord can contain a resistor. This resistor provides a controlled impedance path to a jack or clip at the end of the ground wire cord. The jack or clip connects to frame ground in the work area. Use static control mats as a work surface during repair or modifications to cards in the field. Place static control mats on the floor in the work area. Use conductive foot straps with static control mats. **Always use a wrist strap in addition to the static control mats**.

If you use static control mats, you must test the mats before you use them during any maintenance activities. You can use a Volt-Ohm meter (VOM) to make sure that the impedance measured is reliable and between 0.8 and 10 MΩ. This impedance is from the static control mat to the ground wire jack/clip.

Use static control mats during field repair or modifications of all DMS-100 cards, and other equipment as specified.

Conductive Foot Straps

Use conductive foot straps with a conductive floor or a static control mat. These straps provide a low impedance path from the ankles to the conductive floor or mat. This low impedance path bypasses nonconductive shoes.

You must test conductive foot straps before you use the foot straps during any maintenance activities.

List of terms

DMS
Digital Multiplex System

ESD
electrostatic discharge

FSP
frame supervisory panel

MSP
modular supervisory panel

NTP
Nortel (Northern Telecom) publication

VOM
Volt-Ohm meter

Nortel (Northern Telecom) Publications Customer Feedback Form

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Research Triangle Park, NC 27709

DMS-100 Family

North American DMS-100

Electrostatic Discharge Protection Guide

Product Documentation—Dept 3423
Northern Telecom
P.O. Box 13010
RTP, NC 27709–3010
1-877-622-5669, Option 4 + 1

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